DOCUMENT RESUME

ED 364 546 SP 034 916

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TITLE Effective Teaching Practices.
SPONS AGENCY Open Univ., Heerlen (Netherlands).
PUB DATE 92
NOTE 31p.
AVAILABLE FROM Welko Tomic, The Open University, P.O. Box 2960, NL-6401 DL Heerlen, The Netherlands.
PUB TYPE Information Analyses (070)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Affective Objectives; Cognitive Objectives; *Educational Objectives; Educational Practices; Educational Research; Elementary Secondary Education; Foreign Countries; Higher Education; *Learning Strategies; Literature Reviews; Student Behavior; *Teacher Behavior; *Teacher Effectiveness; *Teaching Methods
IDENTIFIERS Interpretive Research; *Lesson Structure; Netherlands; *Process Product Research

ABSTRACT

Before the cognitive shift in educational psychology, research on teaching practices that brought about desired student outcomes were dominated by the process-product research program, a confirmative approach in which researchers attempt to discover relationships between teaching behaviors (the process) and learning outcomes of students (the product). This paper describes those behaviors of teachers which can be observed and altered in actual teaching practice, provides a framework for examining the findings of process-product research, investigates which teaching behaviors go hand-in-hand with good learning outcomes on the part of students, and determines whether and to what extent teaching behaviors bring about required learning outcomes. Findings of this confirmative research approach show that a well-designed lesson might consist of five sections arranged in the following order: (1) discussion of homework and repetition of the subject matter dealt with during the previous lesson; (2) presentation and explanation of new subject matter; (3) opportunity for students to practice new material and for the teacher to provide feedback and corrective teaching; (4) opportunity for students to work independently; and (5) frequent repetition and testing of subject matter. (Contains approximately 40 references.) (LL)

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ED 364 546

Effective Teaching Practices

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Heerlen, The Netherlands

- 1992 -

Running Head: Teaching Practices

This study was supported by a grant from The Open University.
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S163496

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Abstract

Before the cognitive shift in educational psychology, research on teaching practices that bring about the desired learning outcomes on the part of the students, was dominated by the process-product research program. The findings of this confirmative research approach show that an effective lesson may consist of five sections: (a) homework should be discussed and the material covered recently should be repeated; (b) new material should be presented and explained, using structuring, step-by-step presentation, redundant explanation, frequent progress checks by means of questioning and responding appropriately to students' questions; (c) students' opportunity to practice under the supervision of the teacher who provides feedback and corrective teaching; (d) independent work on the part of students, including homework, prepared by the teacher and spread out over the course of the lesson is conducive to achieving the desired learning outcomes; (e) material should be repeated and tested frequently. To prevent that, through the dominance of cognitive psychology, available and applicable knowledge achieved in behavioristic research may be forced into the background, or indeed may be forgotten, a plea is made for devoting greater care to organizing knowledge into theories.

Effective Teaching Practices

Opinions differ as to what we mean by quality of instruction. One can only consider teaching high quality if students are given scope for personal development. One can hold the opinion that quality has to do with proficiency in such basic skills as reading, writing and arithmetic. Emphasis can also be placed on social skills, whereas one can believe that quality in teaching is only achieved if students display a positive attitude to learning and to school.

On the basis of Bloom's (1976) model of school learning Warries (1985), has proposed four indicators of high-quality teaching, respectively, the learning achievements of students, their affective learning outcomes, the instructional behaviors of teachers, and the latter's job satisfaction. The purpose of the present article is to highlight the first three indicators. Learning achievement is related to cognitive objectives. Students are expected to be familiar with and to understand particular sections of the curriculum and to be able to apply them in practice. Affective learning outcomes implies the achievement of educational objectives that involve a certain attitude toward school, and in particular toward the subject matter. Cognitive learning achievements and affective learning outcomes are indicators of the effects of teaching.

Instructional behaviors are the activities which the teacher carries out so that students can achieve certain objectives. Researchers have for decades concerned themselves with increasing our knowledge of the classroom learning process, with the aim of understanding and if possible improving the quality and

effectiveness of that process. Over the years research has been carried out in a variety of areas: the personality characteristics of teachers, styles of leadership, teaching methods, and the effects resulting from the implementation of various different curricula. It was not until the late sixties that studies appeared establishing a relationship between teaching behaviors and students' achievements. Empirically-based insights into the relationship between teaching behaviors and students' learning outcomes can contribute to influencing learning achievements in a positive way. Knowledge of this relationship is essential to influence the behavior of those already active in the teaching profession, as well as a factor in teacher training.

The purpose of the present article is to describe those behaviors of teachers which can be observed, and altered in actual teaching practice. The focus will be on behaviors which correlate with positive learning outcomes on the part of students, such behaviors being referred to as effective teaching behaviors.

The organization of the paper is as follows. First is that frontal instruction in the general classroom learning process is the most common type of teaching. Second, the two meanings of the adjective "effective" as applied to teaching behavior will be clarified. We will continue with a concise description of two approaches to research into effective teaching behavior. The process-product study and the various phases in that research program dealing with the effectiveness of teaching behavior, will also be discussed. We will conclude the article by presenting

some of the findings of that program.

Frontal Instruction

It is not surprising at all that investigations into the effectiveness of teaching behavior have largely taken place within the context of frontal instruction. The most common type of teaching is with a group of between twenty-five and thirty students being taught simultaneously by a single teacher. The popularity of this method may probably be explained by the fact that there are only a few convincing indications that other methods are any more effective (Jamison, Suppes and Wells, 1974). From the results of a large-scale study involving more than 1000 schools, Goodlad (1984) concluded that frontal instruction was the most frequently applied method.

Cuban (1984) investigated "constancy and change" in educational methods and teaching behavior in the United States over the hundred years previous to his study. He was interested in why certain methods and behaviors remained unchanged, despite strenuous efforts to make education more student-oriented, for example. He offers three explanations for this stability. In the first place, schools are institutions in which social control is exercised and in which students are required to fulfil certain expectations. Teacher-oriented instruction results in this case in student behavior which fulfils the expectations of most members of society. Second, the organizational structure of the school and the class contributes to the stability of teacher-oriented instruction. Third, according to Cuban the culture of instruction is such that it displays a strong tendency towards stability. In other words, those who become teachers teach in the

same way as they themselves were taught.

There are attempts, however, to replace frontal instruction by methods in which the student has a more central role, for example by introducing individual instruction in the form of programmed learning, computer-aided instruction, etc. The results produced by these alternative methods do not seem to justify their replacing frontal instruction entirely. Apparently teachers take a central position in the classroom learning process and they play an active and directing role in that process. Therefore, it seems reasonable within the context of frontal instruction to investigate the quality of instruction, and in particular to examine the relationship between teaching behavior and the learning outcomes of students.

Effective Teaching Practices

Broadly speaking, we can identify two types of research into the effectiveness of teaching behavior (Van der Sijde & Tomic, 1989). According to the first type, teachers are trained to use certain instructional behaviors effectively. "Effectively," in this context, means that the teacher is capable of applying the instructional behaviors he/she has learned. According to this approach, the research objective is to assess the extent to which the teacher can apply newly acquired behaviors, i.e. the instructional behaviors applied by the teacher constitute the dependent variable. This research approach has led to the development of a large number of courses and training programs, for example within the framework of microteaching or in-service training.

According to the second approach, the adjective "effective"

applies not so much to teachers as to the effects of their instructional behavior. In this approach, research serves to determine whether, and if so to what extent, the teacher's instructional behavior brings about the desired learning outcomes on the part of the students. In this second form, these learning outcomes are the dependent variable in both the affective and cognitive domain. However, there is no universal definition of what precisely an excellent, good or effective teacher is (Anderson & Burns, 1989).

Two Research Approaches

Investigators who approach their research from the same methodology will, after all, find it easier to discuss their results than if they make use of a variety of different methods or criteria for determining the validity of evidence. Two groups can be distinguished who hardly ever refer to each other's publications. As far as the investigation of teaching behavior is concerned, there are two main approaches: the confirmative and the interpretative (Anderson & Burns, 1989). Confirmative research aims to confirm a hypothesis; interpretative research attempts to discover personal significance. The first approach is largely quantitative, the second qualitative.

Research from the interpretative position is concerned with understanding phenomena from the perspective of the individual, e.g. defining and interpreting teaching behavior. Interpretative research is based on the "idealistic" position: there is no external reality independent of human cognition. Knowledge is created by a person's own acting. Participant observation is frequently used over the course of a relatively long period of

fieldwork within a certain culture, group or school class. The research is naturalistic and qualitative, with words and statements constituting the elementary data.

Although the methods used within the interpretative approach display a great number of weaknesses, something which naturally expresses itself in the dubious results produced (Shulman, 1986), this approach has undeniably raised a large number of new questions which are certainly worth examining.

Confirmative research is quantitative. It strives for objectivity, for example by making use of concepts that tend to reduce the chance of subjectivity and nonverifiability. It keeps irrelevant variables under control. Propositions are derived from a theory by means of deduction, and confirmed or disproved through statistical analysis carried out on the data collected. The research community requires that it be possible for other investigators to replicate research. Studies can therefore be replicated by other researchers. The basis of this approach is the view that reality is independent of the observer by expressing regularities in generally applicable laws. The researcher wants to show a causal explanation of certain phenomena in the external world by means of controlled observation.

Steps in Process-Product Research Designs

An important example of the confirmative approach to research is known as the process-product research program, in which researchers attempted to discover relationships between teaching behaviors (the process), and the learning outcomes of students (the product). The learning outcomes achieved by the

students were taken as the measure of effectiveness. This program corresponds with the research tradition in behavioral psychology and was the most productive research program investigating teaching behaviors in the seventies and early eighties. Broadly speaking, the results of this approach show that variation in teaching behaviors relates systematically to variation in learning outcomes on the part of students, both in the cognitive and the affective domains (Brophy & Good, 1986; Creemers, 1991).

Activities on the part of teachers which lead to the desired learning outcomes on the part of their students is one of the main research goals. Researchers employ a four-step procedure known as the "descriptive-correlational-experimental loop" (Gage and Giaconia, 1981). First, an observation instrument is used to register those behaviors of teachers, which previous research or theories would suggest are relevant objects of study. A crucial element in this study is the development of suitable observation instruments. Producing observation instruments which make virtually no demands on the interpretative ability of the observer is a considerable attainment. Such an instrument is called a "low inference" observation system of which the Stanford Research Institute Classroom Observation Instrument (Stallings, 1977) and the observation system TOOL, are two examples (Tomic & Van der Sijde, 1989).

The second step is to investigate whether, and if so to what extent, the teaching behaviors which have been registered are related with students' learning outcomes. In order to determine this goal, a research design is employed in which data is available on the cognitive and affective learning achievements of

students both before and after the period during which the behavior of their teacher was observed. Data on the learning achievements before the beginning of the observation period are necessary in order to correct for the effect of prior knowledge on the level of knowledge at the end of the observation period. Prior knowledge is the best predictor of learning outcomes.

The data collected (statistical correlations between teaching behaviors and learning outcomes) cannot, however, be interpreted causally; in other words, the researcher cannot justifiably conclude that the teaching behavior observed actually causes the desired learning outcomes on the part of the students. Such a correlational research design, in which one works back, as it were, from examination of the experimental results in real situations to their causes, is not the exclusive property of educational psychology, but is also applied in a large number of scientific fields, such as epidemiology (Cohen, 1987). In many cases, epidemiologists and educational psychologists can do no more than demonstrate that strong, consistent correlations exist, for example between a high-fat diet and breast cancer, or between positive feedback and students' learning outcomes.

Third, a training course should be developed to examine experimentally those teaching behaviors which are assumed to go hand in hand with the desired learning outcomes on the part of students. Such a course could then be applied after a successful experiment. Researchers who examine the influence of a specific collection of teaching behaviors on the learning outcomes of students must ensure that the teachers involved can apply the behaviors which they have learned, and that they actually do so.

Such courses must naturally be designed in an appropriate manner (Tomic, 1991).

Fourth, field experiments with effective controls should be carried out to assess the effectiveness of the teaching behaviors. A causal connection between certain teaching behaviors and students' learning outcomes can only be identified by means of an experimental manipulation. An experiment is a research design in which the independent variable is manipulated and following this the effects on the dependent variable are assessed. In contrast to the correlational research, researchers who carry out experiments work in a forward direction, from causes - experimental manipulation - to results - effects of the manipulation on a dependent variable -. When students' learning outcomes improve because of the teacher, this implies a causal connection between the teaching behavior (which is alterable) and the students' test scores. The desired change in learning outcomes is assumed to be a function of the teaching behavior.

In order to decide whether the result for the dependent variable can be attributed to the independent variable, a control group is necessary to determine what happens to the dependent variable in the absence of, for example, a certain experimental intervention such as a specific course of training. Besides allowing for a control group in the experimental design, it is also necessary to assign persons, for example students, to the two groups at random. In order to keep the other variables under control when investigating the effectiveness of teaching behavior, both teachers and their classes must be assigned randomly to the experimental and to the control group. This

requirement is obviously easier to meet in the laboratory than in an actual classroom learning situation. It is not impossible to assign students to various groups at random, but doing so may disrupt the normal running of the school. More often than they would wish, researchers are forced to make compromises and to use existing groups of students. It is virtually impossible to carry out genuine experiments in actual teaching situations. A great deal of research in the field of educational psychology therefore involves quasi-experimentation: the independent variable is manipulated, but the students cannot be assigned to experimental and control groups at random, meaning that the investigator does not know for certain whether the groups are entirely comparable as regards relevant characteristics. In fact, statistical testing is not allowed. Researchers have tried to find methods which allow them to draw valid conclusions in spite of the weaknesses of a quasi-experimental research design (cf. Cook & Campbell, 1979).

On the whole, experiments to test the effectiveness of teaching behavior are constructed according to the pretest-posttest control group design (Campbell and Stanley, 1963). Prior to the training period, a valid observation instrument is used to determine the entry behavior of the teachers. This constitutes a "pretest." The course of training to be evaluated is then actually implemented during a certain period of time, either in writing, orally, or through a combination of both methods. After training has been finished, the teaching behavior is once more assessed with the aid of the observation instrument used for the pretest. The difference between the observed results on the

pretest and those on the posttest on teaching behavior provides an indication of the effect attributed to the influence of training. In addition, the results achieved by the group of teachers who were trained are compared with those of teachers who did not participate in the training course, in order to ensure that the desired teaching behaviors were not achieved by means other than the course.

Some Process-Product Research Findings

We present some of the findings obtained in process-product research concerning the relationship between teaching behavior and student learning outcomes in both the cognitive and the affective domain.

A distinction is made between preparatory behavior, i.e. either management behavior or instructional behavior. Management behavior is directed to organize the class and to avoid disorder, in such a way that students can actually learn. Instructional behavior involves behaviors on the part of the teacher which are intended to produce and maintain learning activity on the part of the students. Obviously in some cases these different types of behavior can overlap.

We will start by examining findings related to the creation of conditions suitable for learning school subjects. Following this some research results are described which are related to the management of student behavior. Finally, we will consider, in view of the current state of research, what a lesson should actually be like.

Preparatory Activities and Decision Making

The preparatory behavior and the decision behavior of the

teachers studied in process-product research have a positive effect on the learning outcomes of students. Preparatory activities and decision-making are necessary both for the teacher (to make it possible to do the work well) and for the students (to make good progress).

Effective teachers make preparations with respect to the learning environment well in advance. It is, for example, important to prepare the teaching environment set-up in the classroom in advance. Before the beginning of the school year, the teacher should plan the appropriate placement of the classroom furniture, because this affects the teaching methods and student activities he/she is intending to use. Appropriate placement makes it possible to shift rapidly between the various teaching methods and activities, allowing the best possible use to be made of the available lesson time. With such a set-up, the teacher can also keep track of the way work is progressing and of the students' behavior.

Teachers should also have considered carefully, in advance, how students can carry out written work efficiently. With a view to the best possible use of the available lesson time, it is also necessary to plan those activities not directed towards learning tasks, for example recording students' progress. If frontal teaching is not the only method chosen, it is also important to decide at an early stage how students are to be divided into groups. The way in which these groups are formed is relevant both to learning and to social development. In preparing these groups, then, the teacher must take into account the students' cognitive levels, their learning needs, how the subject

matter can be geared to the different levels in the various groups, and how students in the various groups might react to one another.

In preparing academic activities, it is important to determine the cognitive level and the learning needs of the students. Research has shown that the application by the teacher of appropriate methods of evaluation correlates with good learning outcomes (Evertson, Anderson, Anderson, & Brophy, 1980). Frequent evaluation of students increases the chance that the teacher will establish the correct sequence and pace of teaching (Rosenshine & Stevens, 1986). Another important aspect of preparation is choosing the subjects to be taught. Despite the availability of set syllabuses and textbooks, the final decision as to what is to be taught is in the hands of the teacher. There is a strong correlation between the subjects covered and the students' learning outcomes.

Another important aspect of preparation is the need to give students sufficient time for academic activities within the available lesson time and to keep to the right pace within those activities.

Managing Student Behavior

Process-product research shows that the more time devoted to nonacademic activities, the lower the test scores achieved by students (Evertson & Emmer, 1982). This result can be explained by the fact that there is less time remaining for academic activities. Managing student behavior means providing the facilities and setting up the procedures necessary to create and maintain a situation in which learning and teaching can take

place (Duke, 1979). Such a situation is characterized by a certain degree of order. By order we mean that all students in the class have clear expectations concerning the behavior which will be tolerated from them. It also means that students anticipate what is expected of them and show a high level of conformity with respect to these expectations (Cohen, Intilli & Robbino, 1979).

It is not surprising that the students' learning outcomes are poorer as more time is spent on maintaining order during the lesson. Research findings clearly show that the more effective teacher takes preventative measures more frequently, i.e. measures directed towards preventing disorder (Brophy, 1983). At the beginning of the school year it is important, that students are made aware of the behavior expected of them. The same goes for rules and procedures, which must, furthermore, be explained to the students systematically and which they should practice (Evertson & Emmer, 1982). It must be clear to the students when and how they can get assistance and also what they are allowed to do when they have finished a task.

Two concepts introduced by Kounin (1970) are relevant to the behavior of teachers in curtailing both disorder and the amount of time spent on nonacademic activity: overlapping and withitness. "Overlapping" means that during interaction with students a teacher is capable of doing two or more things at once. The teacher's attention is distributed over a number of different activities. By "withitness," Kounin means communication with students by means of perceptible behavior. The teacher should know what is going on in the class and what each student

is doing. He/she therefore needs to know what activity each student is engaged in and at the same time devote attention to other matters, such as the way in which his/her instruction is progressing.

Research has shown that a flexible transition between the various different activities in the class is conducive to learning outcomes. The same goes for keeping things going during the lesson. Variation in activities is of great importance to students, as is the presentation of assignments in a way that suits their cognitive level.

Effective teachers keep track of student behavior continuously. They remind the students of the rules and if necessary explain them once again (Brophy, 1983). Effective teachers are able to recognize undesirable behavior quickly and to take appropriate measures before disorder arises.

Instructional Activity

It has been shown frequently that students' performances are influenced by the amount of time they spend on academic activities (Karweit, 1983). Therefore teachers need to apply strategies which result in a high level of student involvement. However, the extent of involvement and interest can be increased by creating conditions in the classroom which will reduce the chance of distraction to a minimum.

The choice of subject matter and learning activities is also an important factor in gaining and holding students' attention. The activities and the subject matter must be challenging and must correlate with the cognitive level of the students. This means, for example, that students should be able to experience

success frequently.

In order to get access to the students' actual level teachers may explain in advance what their expectations are. Earlier research showed that a positive effect on students' learning outcomes is whether or not teachers explain which objectives students are expected to achieve (Berliner, 1982).

We wish to emphasize that instructional behavior implies not the teacher's behavior with respect to the particular subject being taught, but his/her general behavior. Teaching behavior may also contain behaviors which are specific to some school subjects; we would call these subject-specific teaching behaviors. They are, for example, applied in the areas of reading, reading comprehension and mathematics. Process-product research has identified patterns of instructional behavior which have a positive influence on the learning outcomes achieved by students. The common element in these patterns is the concept of interactive teaching (Evertson & Smylie, 1987). Interactive teaching can of course take many forms, but it is always possible to distinguish the following activities. New subject matter is presented and explained; there are sections of the lesson when questions can be asked and when discussion of the subject matter takes place; and there are sections of the lesson during which students work independently, but under supervision of the teacher, on assignments dealing with the subject matter. The teacher also goes around the class keeping track of what each student is doing, giving feedback and if necessary explaining the subject matter once more. These instructional behaviors apply in both elementary and secondary education (Rosenshine & Stevens,

1986; Brophy & Good, 1986).

Taking into account the current state of process-product research, a well-designed lesson might consist of five sections arranged in the following order: discussion of homework and repetition of the subject matter dealt with during the previous lesson; presentation and explanation of new subject matter; opportunity for students to practice the new material and for the teacher to provide feedback and corrective teaching; opportunity for students to work independently; frequent repetition and testing of subject matter. We will deal briefly with each of these five sections.

Reviewing homework and repeating subject matter dealt with previously.

Activities involving the discussion of subject matter which has already been covered are important, specifically when new material being presented presumes a knowledge of this subject matter. Experimental studies carried out by Emmer, Sanford & Clements (1983), among others, have shown that the above activities lead to good performances on the part of the students.

Presentation and explanation of new subject matter.

We will now indicate some of the most interesting findings of process-product research as regards the presentation of new subject matter (Rosenshine & Stevens, 1986). In the first place, the structuring behaviors of teachers are of importance for the learning outcomes of their students. This means that the teacher indicates the aim and the relevant components of the lesson, summarizes the lesson beforehand, uses "advance organizers," clarifies sections of the lesson, indicates transitions between the different sections of the lesson, emphasizes the main points,

and finally, at the end of the explanation, summarizes the main issues. He/she should ensure that his/her presentation is clear, because it has been shown that there is a strong correlation between clear presentation and students' results. It has also been shown that the teacher's enthusiasm is of direct importance for the affective results achieved by the students. We know that affective results are a major influence on results in the cognitive domain, since learning, after all, involves an emotional component.

Second, the subject matter can best be presented step by step. The teacher should not continue his/her presentation until the students have understood the material.

Third, difficult elements should be followed by redundant explanation and by many, varied examples. Students's results improve as more redundancy is built in, for example by repeating rules and important concepts. An exception to this should perhaps be made in the case of gifted students. It has been shown that such students display a high level of "escape" behavior during redundant instruction (Freeman, 1991).

Fourth, teachers should check whether students have understood the subject matter, for example by asking a large number of questions, by having students summarize the most important issues in their own words, by explaining points once again or by having students do so. Teachers should react properly to students' answers and to their other responses. If an answer is correct, the student should be told so. If it is partially correct, the element which is correct should be confirmed, i.e. feedback as corrective reinforcement. Incorrectness should also

be pointed out.

After asking a question, a teacher should pause for a certain amount of time before indicating which of the students should answer.

Opportunity for practice.

After explaining and discussing the new subject matter, an effective teacher gives the students the opportunity to practice this new material under his/her guidance. The intention is to assess whether they have understood the material. This process can take the form of having them answer a wide range of questions or having them carry out written tasks. Of course all the students need to have the opportunity to answer questions and to practice (Stallings, 1980). In most cases the questions should lead to students' giving the correct answer, at least 75% of the time (Brophy & Good, 1986). Teachers should identify and correct students' mistakes at an early stage, so that they are not given the chance to continue making them (Rosenshine & Stevens, 1986). Research findings show that effective teachers frequently provide feedback specific to the subject matter being covered and, if necessary, offer further explanation (Brophy, 1979).

Independent work.

If independent work in class and at home are to be effective, the teacher must keep careful track of the activities involved. The assignments given to students to carry out independently should have a success rate of 90 to 100%. Independent work consisting of assignments at a suitable level provides students the opportunity to practice and generally leads to an increase in their knowledge. Naturally, they must be

capable of finishing the assignments once the activities have been prepared by the teacher.

Independent work should not dominate the classroom learning situation. The majority of lesson time should be devoted to active teaching and supervision by the teacher. During the remaining time students may work independently. Such a situation would be applicable especially in elementary education and in the lower classes of secondary education. The amount of time spent on independent work may increase in the higher classes of secondary education, as a preparation for higher education.

The effectiveness of independent work is greater when the periods of independent work are spread out over the course of the lesson. If students are required to spend too much time on a single activity, their interest in this activity decreases.

During independent work, effective teachers circulate in the class a great deal, checking students' work, asking questions and providing explanations. All of these activities increase student involvement, which again has a positive effect on their learning outcomes (Evertson, Weade, Green & Crawford, 1985).

Frequent repetition and testing of subject matter.

Research results show that frequent repetition and, if necessary, repeated explanations are effective teaching behaviors. Such revision makes it possible to check whether students understand the subject matter and to decide whether they are in a position to deal with new material.

Concluding Remarks

Teachers are the crucial factor in increasing knowledge, skills and insights, both in the cognitive and the affective

domains. They have a central position in the classroom learning process, play a directive and active role and decide the daily classroom routine. For this reason, it is relevant from both the theoretical and the practical point of view to investigate which teaching behaviors will bring about the desired learning outcomes. The process-product research program which flourished in the seventies and early eighties was aimed at discovering which teaching behaviors go hand in hand with good learning outcomes on the part of students.

The concept of effective teaching behavior relates to the effects which this behavior has on students' learning outcomes. This means that their learning outcomes are an indicator of the effectiveness of teaching behavior. The process-product research program, which aims to determine whether and to what extent teaching behaviors bring about the required learning outcomes, falls within the confirmative approach to research.

Preparatory activities and making certain decisions not directly related to instruction but necessary for creating conditions suitable for the classroom learning process have a positive effect on students' learning outcomes. Effective teaching behaviors also include determining the students' cognitive levels and their learning needs, evaluating students frequently and choosing the subjects to be covered. Measures should be taken to prevent disorder, such as setting rules and procedures at the beginning of the school year. During interaction with students, the teacher should be capable of doing a number of different things simultaneously. Besides communicating with the students, he/she should know what each

student is doing. Variation in activity and a flexible transition between the different forms are conducive to good learning outcomes. Making optimal use of the lesson time allocated to teachers for teaching and to students for learning academic subjects, giving the subject matter sufficient consideration, and keeping the lesson going at a certain pace all go hand in hand with positive learning outcomes.

The findings of process-product research show that an effective lesson may consist of five sections. In the first place, homework should be discussed and the material covered recently should be repeated. Second, new material should be presented and explained. Significant teaching behaviors in this respect are: structuring, step-by-step presentation of material, redundant explanation, frequent progress checks by means of questioning and responding appropriately to students' questions. Third, students should be given the opportunity to practice under the supervision of the teacher. Fourth, independent work on the part of students is conducive to achieving the desired learning outcomes. Homework is an important form of such work. Independent work is effective when it is prepared by the teacher and is spread out over the course of the lesson. Fifth, process-product research shows that material should be repeated and tested frequently.

One point should be borne in mind. The behaviors which have been shown to be effective are fairly stable and are more general than subject-specific. Cognitively-oriented research is providing increasing indications that the subject being taught probably influences some sections of a lesson structure. Cognitively-

oriented researchers are interested in teacher and student cognition, specifically as regards the acquiring and understanding of knowledge and the actions that proceed from knowledge. It was in particular in the eighties that investigators began conducting a great deal of research into knowledge and learning within individual school subjects, research which has definitely made important contributions to educational psychology (De Corte, 1991, et al.).

There has been a great deal of research in the field of educational psychology, in particular into the topic of teacher effectiveness. Despite this tremendous focus of effort, some disunity has become evident (Vroon, 1986). Educational psychologists working in the same period of time have nontheless created more or less separate 'intellectual circuits', which have little or no contact with each other. Cognitivists and behaviorists, who are now in the minority, have come to form more or less separate intellectual circuits, as a result of their quite distinct theoretical principles. In many cases, the results achieved in studies with a behavioristic orientation are not acceptable to researchers who favor cognitivistic or interpretative approaches.

Disunity has also arisen in educational psychology because old facts no longer fit the language of the new approach. The risk is that, through the dominance of cognitive psychology, available and applicable knowledge may be forced into the background, or indeed may be forgotten altogether. To prevent this from happening, one must devote greater care to organizing knowledge into theories than one does at present.

Theory emptiness and theory rigidity are both prime factors in the loss of information. Studying previous research and striving for continuity of research within a specific domain are of the utmost importance not only for research itself, but also for the practice of education.

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